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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,187	02/27/2002	Joseph A. Kwak	I-2-0203.4US	3548

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EXAMINER	
RYMAN, DANIEL J	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/085,187	KWAK, JOSEPH A.	
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *13*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. In view of the Appeal Brief filed on 7/16/2004, PROSECUTION IS HEREBY REOPENED. The Final Rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

2. This action is a Final Rejection since the rejection is based on the amendments to the claims filed 1/28/2004.

Information Disclosure Statement

3. The information disclosure statement filed 2/27/2002 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Specifically, the non-patent literature in the IDS has not been considered.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messenger (USPN 5,101,406).

6. Regarding claim 1, Messenger discloses a method for adjusting data modulation at a subscriber unit, comprising: receiving data at a transmitter for transmission (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7); formatting the received data into packets for transmission, each packet having a particular type of encoding/data modulation (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7); transmitting the packets (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7); monitoring a return channel for receipt of an acknowledgment for each packet that that packet has been received (col. 8, lines 60-col. 9, line 3, esp. col. 8, lines 63-65); collecting error statistics (col. 8, lines 60-col. 9, line 3, esp. col. 8, lines 65-67); and adjusting each particular encoding/data modulation using the collected error statistics (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7), wherein if the collected error statistics indicate a low number of errors, a higher capacity encoding/modulation scheme (short noise code, PN1) is selected as the particular encoding/data modulation (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7) and if the collected error statistics indicate a high number of errors, a lower capacity encoding/data modulation scheme (long noise code, PN2) is selected as the particular encoding/data modulation (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7).

Messenger does not expressly disclose, in this embodiment, retransmitting a packet at the transmitter, if an acknowledgment for that packet has not been received. However, Messenger does disclose that "Error checking protocols and re-transmission of non-received packets, implicit in any packet transmission system, can accommodate the occasional loss of a packet" (col. 2, lines 43-45). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to retransmit a packet at the transmitter, if an acknowledgment for that packet has not been received, since this is implicit in any packet transmission system.

Messenger does not expressly disclose that the error statistics comprise retransmission statistics, where Examiner notes that Messenger's error statistics pertain to lost packets (col. 8, lines 60-65). Messenger does disclose that "Error checking protocols and re-transmission of non-received packets, implicit in any packet transmission system, can accommodate the occasional loss of a packet" (col. 2, lines 43-45). Thus, Messenger suggests that statistics tracking the number of errors (lost packets) and statistics tracking the number of retransmissions are equivalent since the number of errors in the system will be the same as the number of retransmissions (an error will result in a retransmission). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the error statistics comprise retransmission statistics since these statistics are equivalent.

7. Regarding claim 7, Messenger discloses a method for adjusting data modulation at a subscriber, comprising: formatting data into packets for transmission over a wireless air interface (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7); receiving packets of data over said air interface, each packet having a particular encoding/data modulation (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7); for each received packet, generating and transmitting a positive

acknowledgment at the physical layer of said air interface when a received packet has an acceptable error rate (col. 8, lines 60-col. 9, line 3, esp. col. 8, lines 63-65); collecting error statistics (col. 8, lines 60-col. 9, line 3, esp. col. 8, lines 65-67), wherein if the collected error statistics indicate a low number of errors, a higher capacity encoding/modulation scheme (short noise code, PN1) is selected as the particular encoding/data modulation (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7) and if the collected error statistics indicate a high number of errors, a lower capacity encoding/data modulation scheme (long noise code, PN2) is selected as the particular encoding/data modulation (col. 2, lines 56-65 and col. 8, line 50-col. 9, line 7).

Messenger does not expressly disclose that the error statistics comprise retransmission statistics, where Examiner notes that Messenger's error statistics pertain to lost packets (col. 8, lines 60-65). Messenger does disclose that "Error checking protocols and re-transmission of non-received packets, implicit in any packet transmission system, can accommodate the occasional loss of a packet" (col. 2, lines 43-45). Thus, Messenger suggests that statistics tracking the number of errors (lost packets) and statistics tracking the number of retransmissions are equivalent since the number of errors in the system will be the same as the number of retransmissions (an error will result in a retransmission). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the error statistics comprise retransmission statistics since these statistics are equivalent.

8. Claims 2, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messenger (USPN 5,101,406) as applied to claims 1 and 7 above, and further in view of Sayeed et al (USPN 5,828,677).

9. Regarding claim 2, referring to claim 1, Messenger does not expressly disclose that the particular type of encoding/data modulation is forward error correction (FEC). Sayeed teaches, in a system for adaptive ARQ schemes, using FEC as a type of encoding/data modulation since FEC is very well known (col. 1, lines 42-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to use FEC as a type of encoding/data modulation since FEC is a very well known encoding/data modulation scheme.

10. Regarding claims 6 and 9, referring to claims 1 and 7, Messenger does not expressly disclose identifying a packet as having an unacceptable error rate responsive to receipt of a negative acknowledgement since Messenger discloses using ACK (col. 2, line 46-col. 3, line 6 and col. 8, line 25-col. 9, line 15). Sayeed teaches, in a system for adaptive ARQ schemes, using receipt of a NACK to indicate an unacceptable error rate since NACK signals indicate that a signal was received erroneously (col. 1, lines 42-61 and col. 2, lines 55-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to identify a packet as having an unacceptable error rate response to receipt of a negative acknowledgment since NACK signals indicate that a signal was received erroneously.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Messenger (USPN 5,101,406) in view of Sayeed et al (USPN 5,828,677) as applied to claim 2 above, and further in view of Barton et al (USPN 6,449,246).

12. Regarding claim 3, referring to claim 2, Messenger in view of Sayeed discloses FEC encoding/data modulation. Messenger in view of Sayeed does not expressly disclose that the packets are transmitted using an orthogonal frequency division multiple access (OFDMA) air interface and that selective nulling of subchannels in an OFDMA set is performed. Barton

teaches, in a wireless system employing FEC (col. 8, line 64-col. 9, line 3), that OFDM "is well-known in the industry...[as] an effective means of mitigating Intersymbol Interference (ISI)" (col. 1, lines 29-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an OFDMA system in order to mitigate Intersymbol Interference. Barton also teaches that it is well known to null subchannels in an OFDM system in order to lower PAR (col. 11, lines 34-38). Examiner notes that Applicant does not specifically define "nulling of subchannels" in the claim such that Examiner is free to interpret "nulling of subchannels" in any manner, as long as the interpretation is reasonable. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform FEC encoding/data modulation adjusting in addition to selective nulling of subchannels in an OFDMA set in order to perform data correction (FEC) and lower PAR (selective nulling) in an OFDMA system.

13. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Messenger (USPN 5,101,406) as applied to claim 1 above, and further in view of Chow (USPN 6,064,692).

14. Regarding claim 4, referring to claim 1, Messenger does not expressly disclose that the packets are transmitted using a single carrier having a frequency domain equalization (SC-FDE) air interface. Chow discloses, in a wireless transmission system using FEC, that frequency domain equalization is used to equalize the phase and attenuation over the various frequencies (col. 2, lines 4-18). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a single carrier having a frequency domain equalization (SC-FDE) air interface since frequency domain equalization is well known in order to equalize the phase and attenuation over the various frequencies.

15. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messenger (USPN 5,101,406) as applied to claims 1 and 7 above, and further in view of Chen (USPN 5,982,760).

16. Regarding claims 5 and 8, referring to claims 1 and 7, Messenger does not expressly disclose that the return channel is a fast feedback channel when the packets are transmitted using a code division multiple access (CDMA) air interface. Chen teaches, in a wireless system, that CDMA contains a fast feedback channel on which return messages are transmitted where the return channel has high bandwidth or low delay (col. 2, lines 52-57 and col. 4, lines 54-57). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the return channel be a fast feedback channel in a CDMA system since fast feedback channels are well known as means to have low delay or high bandwidth on the return channel.

Conclusion

17. Applicant's amendment of1/28/2004 necessitated the ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 7:00-4:30 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/DJR/ Daniel J. Ryman
Examiner
Art Unit 2665

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